DoD Spectrum Workshop 2011

"Spectrum Support to Our Military Forces – The Challenge Ahead"

Spectrum Strategic Planning

Disclaimer

- **The views expressed in this briefing are personal views and do not represent official Air Force position**
- **I <u>fully</u> support the President's direction for the National Telecommunications and Information Administration (NTIA) to work with the Federal Communications Commission (FCC) and federal agencies …**
  - **To identify 500 MHz of federal and non-federal spectrum for wireless broadband within 10 years,**
  - **While protecting critical current and future capabilities**
- **I do not claim to have all the answers and aim to *elicit thought and open discussion***

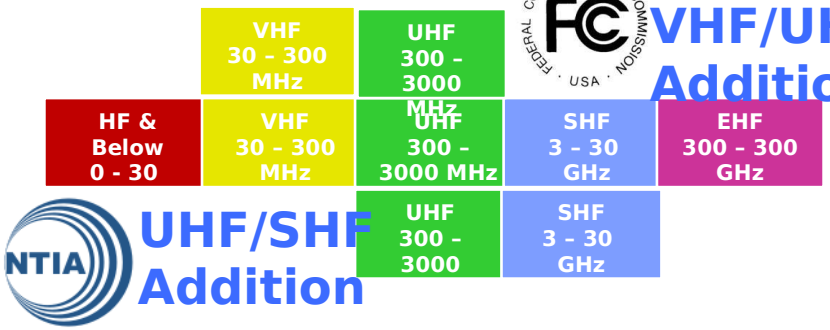
Fundamental Spectrum Principles

- **Finite natural resource; cannot be**

Banked **Expanded** **Concentrated**

US Strategic Spectrum Reserve

600 MHz-Years



VHF/UHF Addition

UHF/SHF Addition

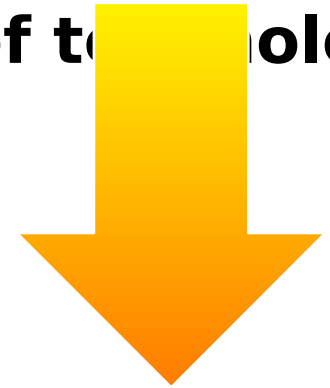
- **National asset**
  - **Enables diverse government, commercial, consumer services and capabilities**
  - **Optimize use to deliver the maximum national benefit**

Current Process – Shortfalls

- No short or long range forecasting/guidance
  - Risk – expensive modifications over life of system
  - New systems in development for candidate bands
- No method to balance diverse requirements
  - Consumer services, defense, medical, etc.
  - Maximum benefit to nation not assured
- Limited incentive(s) to improve use
  - New/best technologies not always implemented quickly
  - Lacks holistic approach required to produce benefits
- Limited comparable spectrum availability

Inputs to Strategic Spectrum Planning

- **Requirements – both current and predicted future**
- **Current allocations/use (US & international)**
- **Current regulatory environment**
- **Current state of technology**



- **Current and projected gaps (unmet requirements)**

Points to Ponder

- **Balancing competition against *duplication***
  - **How many ways to receive same television program?**
- **Definition of requirements**
  - **Does possible equate to *required*?**
- **Definition/measure of utility**
  - **What is a *common scale* to measure diverse functions?**
- **Increasing utility from a finite resource**
  - **What *truly enables* increased utility?**
- **Importance of *international harmonization***
  - **What are the risks and rewards of going it alone?**
- **The future is full of *unknowns***

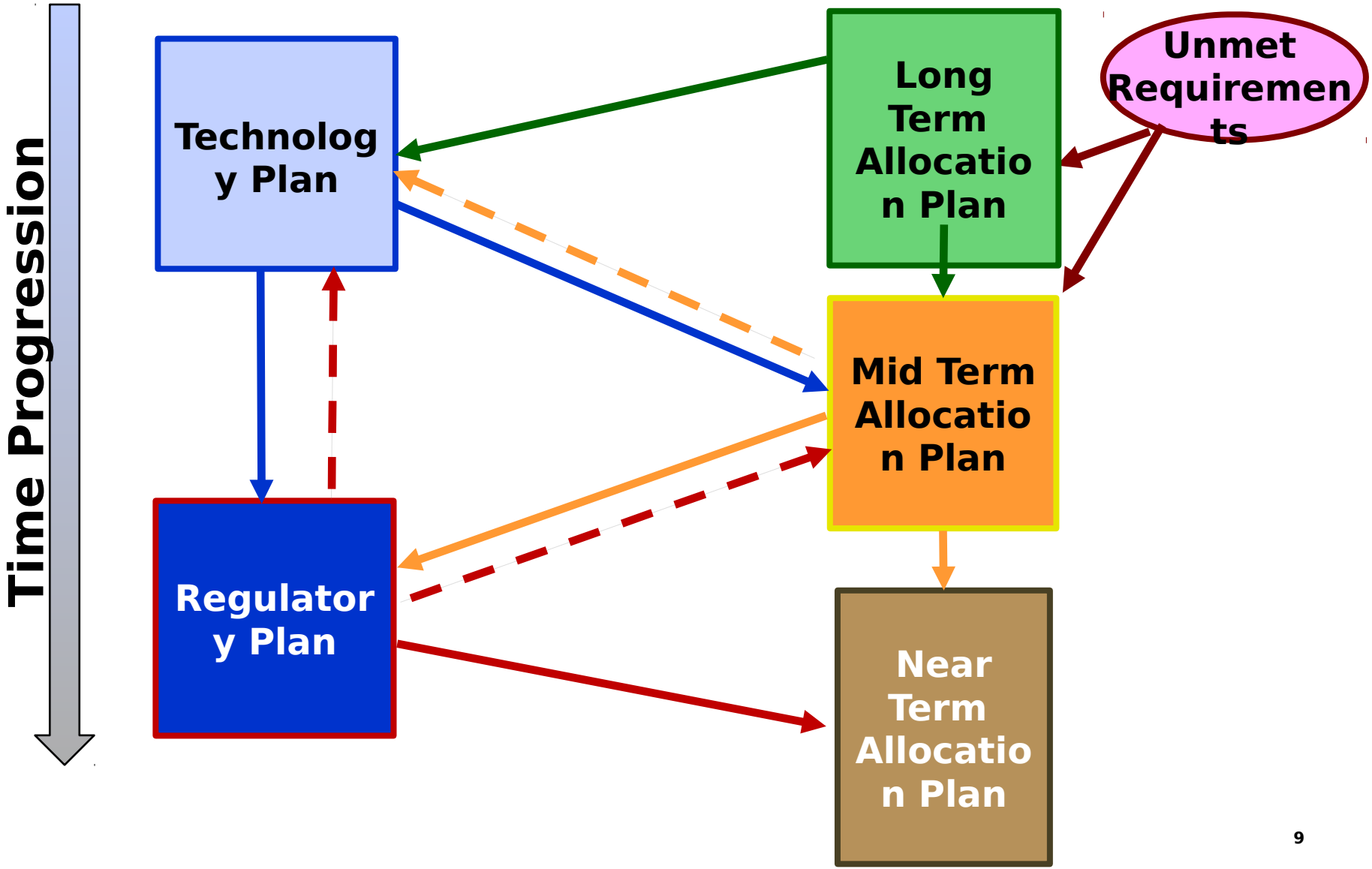
Strategic Spectrum Plan Key Components

- **Technology Plan**
  - **Identifies, prioritizes, and organizes research and development of promising spectrum technologies**
  - **Deployment of new technologies can increase utility**
- **Regulatory Policy Plan**
  - **Identifies, prioritizes and organizes development/revision of regulatory policy to enhance spectrum utility (including deployment of new technologies)**
- **Allocation/Use Plans**
  - **Short–, Mid– and Long–Term (*Next Slide*)**
  - **Supported by Regulatory Policy & Technology Plans**

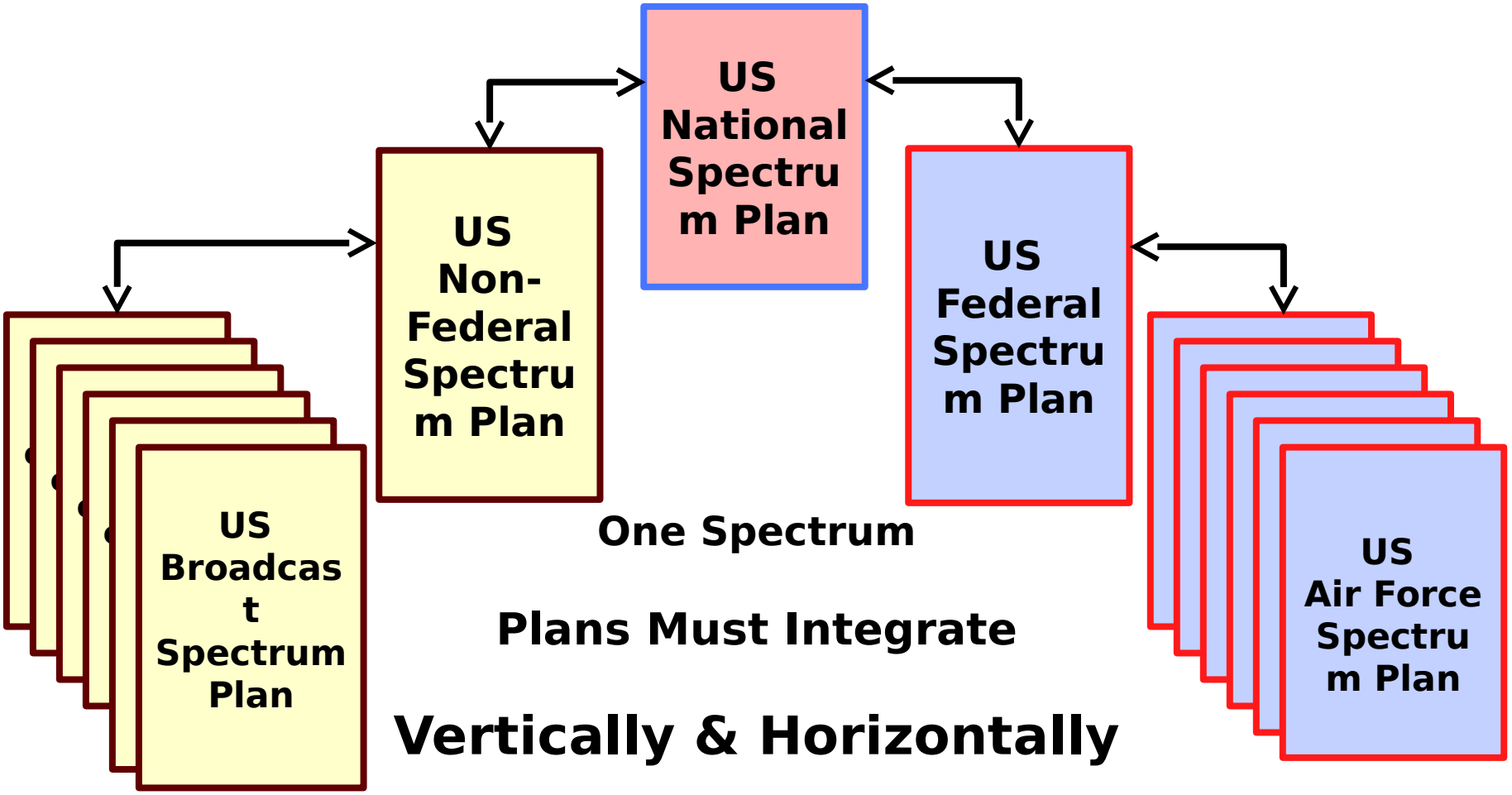
Strategic Spectrum Plan Key Components Allocation/Use Plans

- **Near–Term (1 – 5 Years)**
  - **Very specific bands, dates, exclusions, conditions/rules**
  - **Relocations in progress**
  - **Auctions conducted**
  - **Supported by Regulatory Policy Plan**
- **Mid–Term (6 – 15 Years)**
  - **Studies conducted, technologies refined/tested/finalized**
  - **New uses identified, bands refined/finalized**
  - **Relocation/termination/sharing plans developed**
  - **Supported Technology Plan; Drives Regulatory Plan**
- **Long–Term (16 – 30+ Years)**
  - **Broad concepts, general bands**
    - **Reduced fixed service below 6 GHz by 50% in 20 yrs, 90% 30 yrs**

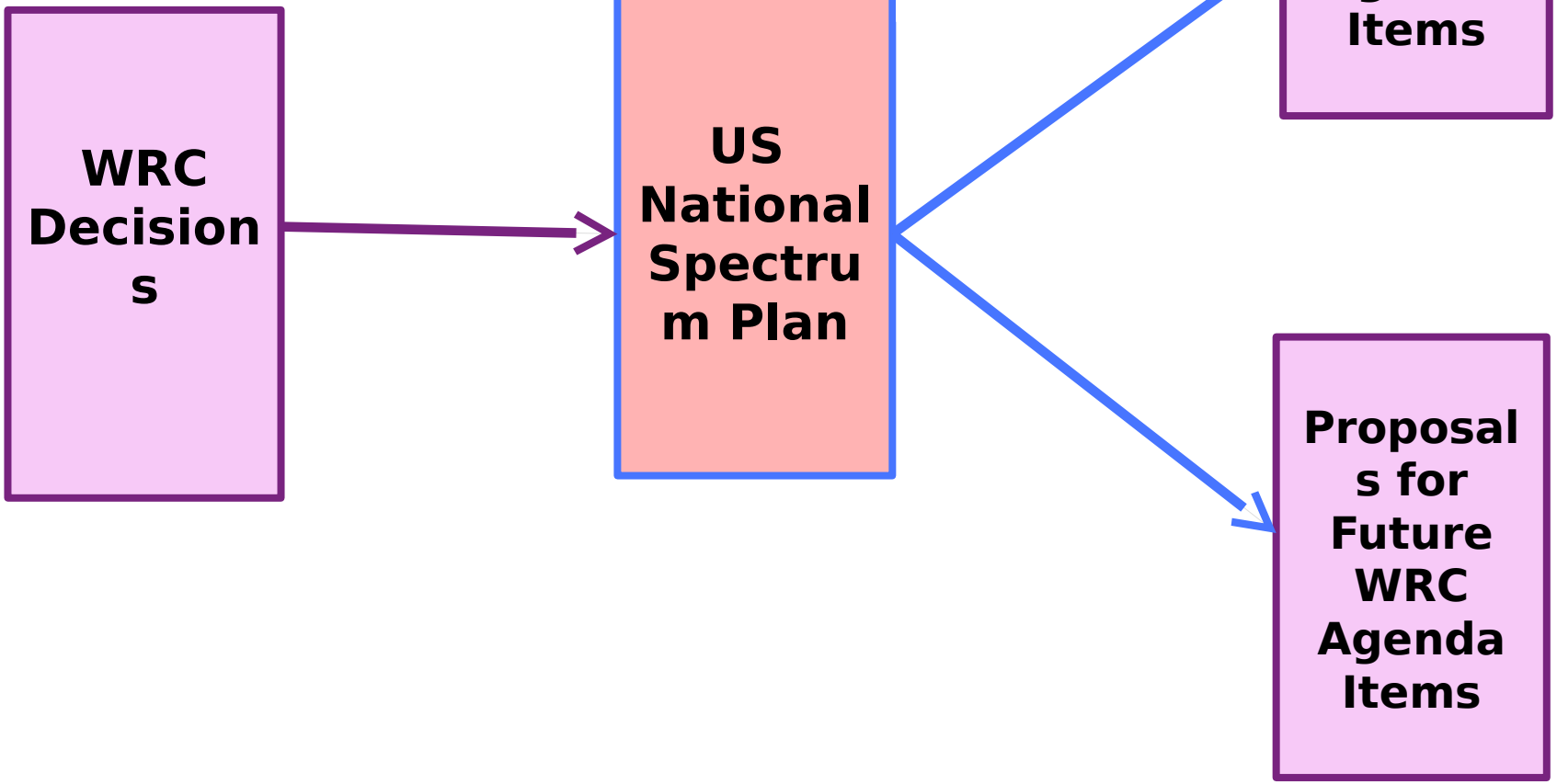
Plan Component Relationships



Holistic Approach



Relationship to International Agenda



Challenges – It Isn't Easy

- **Resources – to do it right**
  - **People (talented), money, time**
- **Balancing competing interests**
  - **Finding Apples-to-Oranges comparison**
- **Requires Long-Term View**
  - **Does not mesh well with short term horizons**
- **Factors we influence, but do not control**
  - **International (WRC, ICAO, etc.), Legislative**
- **Unknowns – Particularly Long Term**
  - **Technological/societal developments**
  - **Natural or manmade events**
- **Transitioning to a long term process**

Summary & Recommendations

- **Maximizing national benefit requires long term approach to spectrum management**
- **Present system lacks long term view essential to maximizing benefits**

Optimum approach is not easy;
Present approach is neither easy nor optimum